AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (currently amended): A corneal topography analysis system comprising:

an input unit for inputting corneal ~~curvature~~ shape data of an eye to be examined; ~~and~~

an analysis unit that determines plural indexes characterizing topography of the cornea based on the input corneal ~~curvature~~ shape data, the analysis unit further judges corneal topography ~~from features inherent in predetermined classifications of corneal topography~~ of the eye, including keratoconus (KC), keratoconus suspect (KCS), and pellucid marginal degeneration (PMD) using the determined indexes and a neural network ~~so as to judge at least one of normal cornea, myopic refractive surgery, hyperopic refractive surgery, corneal astigmatism, penetrating keratoplasty, keratoconus, keratoconus suspect, pellucid marginal degeneration, or other classification of corneal topography~~; and

a display unit that displays a judging result by the analysis unit,

wherein the neural network is trained so as to input corneal topography having been clinically judged in advance, including keratoconus, keratoconus suspect and pellucid marginal degeneration, determines weighted coefficients for each corneal topography and output the judging result of the corneal topography.

Claims 2-10. (canceled).

11. (currently amended): ~~The~~ A corneal topography analysis system ~~of claim 1~~ comprising:

an input unit for inputting corneal shape data of an eye to be examined;

an analysis unit that determines plural indexes characterizing topography of the cornea based on the input corneal shape data, the analysis unit further judges corneal topography of the eye, including keratoconus (KC), keratoconus suspect (KCS), and pellucid marginal degeneration (PMD) using the determined indexes and a neural network; and

a display unit that displays a judging result by the analysis unit,

wherein said analysis unit ~~includes means for converting~~ converts the corneal ~~curvature~~ shape data entered from the input unit into a denser first data matrix by interpolation, ~~removing~~ removes high-frequency components from the data by frequency analysis, and ~~converting~~ converts obtained data into corneal curvature data in the form of a given second data matrix.

12. (original): The corneal topography analysis system of claim 11, wherein said analysis unit removes the high-frequency components by fast Fourier transform (FFT) and smoothes the corneal curvature data.

13. (original): The corneal topography analysis system of claim 11, wherein the corneal curvature data entered by the input unit is a polar coordinate data matrix, and wherein said analysis unit converts the corneal curvature data into an orthogonal coordinate data matrix as the first data matrix, removes high-frequency components by two-dimensional FFT from the data, smoothes the obtained corneal curvature data by inverse FFT, and then converts the smoothed data into a polar coordinate data matrix as said second data matrix.

Claims 14-17. (canceled).

18. (currently amended): ~~The~~ A corneal topography analysis system ~~of claim 14,~~ comprising:

an input unit that enters corneal shape data of an eye to be examined; and

~~wherein the corneal curvature data entered by the input unit is a polar coordinate data matrix, and wherein said~~

~~computational~~ an analysis unit that converts the corneal ~~curvature~~ shape data into an orthogonal coordinate data matrix as ~~the~~ a denser first data matrix by interpolation, removes high-frequency components by ~~two-dimensional~~ fast Fourier transform FFT from the data, smoothes the obtained corneal ~~curvature~~ shaped data by inverse FFT, ~~and then~~ converts the smoothed data into a polar coordinate data matrix as ~~said~~ a given second data matrix and judges corneal topography of the eye based on the converted data.

Claims 19-22. (canceled).

23. (currently amended): A method of analyzing corneal topography of a cornea comprising the steps of:

obtaining corneal ~~curvature~~ shape data of an eye to be examined;

determining plural indexes characterizing topography of the cornea based on the obtained corneal ~~curvature~~ shape data; and

judging corneal topography ~~from features inherent in predetermined classifications of corneal topography~~ of the eye, including keratoconus (KC), keratoconus suspect (KCS), and pellucid marginal degeneration (PMD) using the determined indexes and a neural network ~~so as to judge at least one of normal cornea, myopic refractive surgery, hyperopic refractive surgery, corneal astigmatism, penetrating keratoplasty, keratoconus, keratoconus suspect, pellucid marginal degeneration, or other classification of corneal topography~~; and

displaying a judging result by the analysis unit,

wherein the neural network is trained so as to input corneal topography having been clinically judged in advance, including keratoconus, keratoconus suspect and pellucid marginal degeneration, determines weighted coefficients for each corneal topography and output the judging result of the corneal topography.

Claim 24. (canceled).

25. (currently amended): A method of analyzing corneal topography of a cornea comprising the steps of:

obtaining corneal ~~curvature~~ shape data of an eye to be examined;

converting the entered corneal ~~curvature~~ shape data into an orthogonal coordinate data matrix as a denser first data matrix by interpolation;

removing high-frequency components from resulting data by ~~frequency analysis~~ fast Fourier transform FFT;

smoothing the obtained corneal shaped data by inverse FFT;

converting ~~produced~~ smoothed data into ~~corneal curvature data in the form of~~ a polar coordinate data matrix as a given second data matrix; and

judging ~~categories of~~ corneal ~~cases~~ topography based on the converted ~~corneal curvature~~ data.

26. (new): The corneal topography analysis system according to claim 1, wherein

the corneal topography to be judged by the analysis unit further includes corneal subjected to myopic refractive surgery (MRS) and corneal subjected to hyperopic refractive surgery (HRS), and

the neural network is trained so as to input corneal topography having been clinically judged in advance, including corneal subjected to myopic refractive surgery and corneal subjected to hyperopic refractive surgery, determines weighted coefficients for each corneal topography and output the judging result of the corneal topography.

27. (new): The corneal topography analysis system according to claim 1, wherein

the corneal topography to be judged by the analysis unit further includes at least one of normal cornea (NRM), corneal astigmatism (AST) and penetrating keratoplasty (PKP), and

the neural network is trained so as to input corneal topography having been clinically judged in advance, including at least one of normal cornea (NRM), corneal astigmatism (AST) and penetrating keratoplasty (PKP), determines weighted coefficients for each corneal topography and output the judging result of the corneal topography.

28. (new): The corneal topography analysis system according to claim 1, wherein the plural indexes to be determined by the analysis unit includes at least one of minimum keratometry value (MINK), average corneal power (ACP) and corneal eccentricity index (CEI).

29. (new): The corneal topography analysis system according to claim 1, wherein the plural indexes to be determined by the analysis unit includes minimum keratometry value (MINK), surface regularity index (SRI), area compensated surface regularity index (SRC), opposite sector index (OSI), differential sector index (DSI), center/surround index (CSI), keratoconus prediction index (KPI), simulated keratometric cylinder (CYL), irregular astigmatism index (IAI), average corneal power (ACP), analyzed area (IAA), corneal eccentricity index (CEI), keratoconus index (KCI), coefficient of variation of corneal power (CVP), standard deviation of corneal power (SDP) and surface asymmetry index (SAI).